

CLAIMS:

1. Surface-modified, pyrogenically produced oxides doped by aerosol.
2. Surface-modified, pyrogenically produced oxides doped by aerosol, characterized in that the oxides are oxides from the group SiO_2 , Al_2O_3 , TiO_2 , B_2O_3 , ZrO_2 , In_2O_3 , ZnO , Fe_2O_3 , Nb_2O_5 , V_2O_5 , WO_3 , SnO_2 , GeO_2 .
3. Surface-modified, pyrogenically produced oxides doped by aerosol in accordance with claim 1 or 2, characterized in that they are surface-modified with one or several compounds from the following groups:
 - a) Organosilanes of the type $(\text{RO})_3\text{Si}(\text{C}_n\text{H}_{2n+1})$ and $(\text{RO})_3\text{Si}(\text{C}_n\text{H}_{2n-1})$
 $\text{R} = \text{alkyl}$
 $n = 1 - 20$
 - b) Organosilanes of the type $\text{R}'_x(\text{RO})_y\text{Si}(\text{C}_n\text{H}_{2n+1})$ and $(\text{RO})_3\text{Si}(\text{C}_n\text{H}_{2n+1})$
 $\text{R} = \text{alkyl}$
 $\text{R}' = \text{alkyl}$
 $\text{R}' = \text{cycloalkyl}$
 $N = 1 - 20$

$$x+y = 3$$

$$x = 1, 2$$

$$y = 1, 2$$

c) Halogen organosilanes of the type $X_3 Si(C_nH_{2n+1})$ and $X_3 Si(C_nH_{2n-1})$

$$X = Cl, Br$$

$$n = 1 - 20$$

d) Halogen organosilanes of the type $X_2 (R') Si(C_nH_{2n+1})$ and

$$X_2 (R') Si(C_nH_{2n-1})$$

$$X = Cl, Br$$

$$R' = alkyl$$

$$R' = cycloalkyl$$

$$n = 1 - 20$$

e) Halogen organosilanes of the type $X (R')_2 Si(C_nH_{2n+1})$ and

$$X (R')_2 Si(C_nH_{2n-1})$$

$$X = Cl, Br$$

$$R' = alkyl$$

$$R' = cycloalkyl$$

$$n = 1 - 20$$

f) Organosilanes of the type $(RO)_3Si(CH_2)_m-R'$

R = alkyl

m = 0.1 – 20

R' = methyl-, aryl (e.g., -C₆H₅, substituted phenyl groups)

-C₄F₉, OCF₂-CHF-CF₃, -C₆F₁₃, -O-CF₂-CHF₂

-NH₂, =N₃, -SCN, -CH=CH₂, -NH-CH₂-CH₂-NH₂,

-N-(CH₂-CH₂-CH₂NH₂)₂

-OOC(CH₃)C=CH₂

-OCH₂-CH(O)CH₂

-NH-CO-N-CO-(CH₂)₅

-NH-COO-CH₃, -NH-COO-CH₂-CH₃, -NH-(CH₂)₃Si(or)₃

-S_x-(CH₂)₃Si(OR)₃

-SH

-NR'R''R''' (R' = alkyl, aryl; R'' = H, alkyl, aryl; R''' = H, alkyl, aryl, benzyl, C₂H₄NR'''' R''''' with R'''' = A, alkyl and R''''' = H, alkyl

g) Organosilanes of the type (R'')_x(RO)_ySi(CH₂)_m-R'

R'' = alkyl x+y = 2

= cyclolalkyl x = 1, 2

y = 1, 2

m = 0.1 to 20

R' = methyl-, aryl (e.g., -C₆H₅, substituted phenyl groups)

-C₄F₉, -OCF₂-CHF-CF₃, -C₆F₁₃, -O-CF₂-CHF₂

-NH₂, -N₃, SCN, -CH=CH₂, -NH-CH₂-CH₂-NH₂,
-N-(CH₂-CH₂-NH₂)₂
-OOC(CH₃)C=CH₂
-OCH₂-CH(O)CH₂
-NH-CO-N-CO-(CH₂)₅
-NH-COO-CH₃, -NH-COO-CH₂-CH₃, -NH-(CH₂)₃Si(OR)₃
-S_x-(CH₂)₃Si(OR)₃
-SH
-NR'R''R''' (R' = alkyl, aryl; R'' = H, alkyl, aryl; R''' = H, alkyl, aryl, benzyl, C₂H₄NR'''' R''''' with R''''' = A, alkyl and R'''' = H, alkyl)

h) Halogen organosilanes of the type X₃Si(CH₂)_m-R'

X = Cl, Br

m = 0, 1 - 20

R' = methyl-, aryl (e.g., -C₆H₅, substituted phenyl groups)

-C₄F₉, -OCF₂-CHF-CF₃, -C₆F₁₃, -O-CF₂-CHF₂
-NH₂, -N₃, SCN, -CH=CH₂, -NH-CH₂-CH₂-NH₂,
-N-(CH₂-CH₂-NH₂)₂
-OOC(CH₃)C=CH₂
-OCH₂-CH(O)CH₂
-NH-CO-N-CO-(CH₂)₅

-NH-COO-CH₃, -NH-COO-CH₂-CH₃, -NH-(CH₂)₃Si(OR)₃
-S_x-(CH₂)₃Si(OR)₃
-SH

i) Halogen organosilanes of the type (R)X₂Si(CH₂)_m-R'

X = Cl, Br

R = alkyl such as methyl, - ethyl-, propyl-

m = 0, 1 – 20

R' = methyl-, aryl (e.g., -C₆H₅, substituted phenyl groups)

-C₄F₉, -OCF₂-CHF-CF₃, -C₆F₁₃, -O-CF₂-CHF₂

-NH₂, -N₃, SCN, -CH=CH₂, -NH-CH₂-CH₂-NH₂,

-N-(CH₂-CH₂-NH₂)₂

-OOC (CH₃)C = CH₂

-OCH₂-CH(O) CH₂

-NH-CO-N-CO-(CH₂)₅

-NH-COO-CH₃, -NH-COO-CH₂-CH₃, -NH-

(CH₂)₃Si(OR)₃

-S_x-(CH₂)₃Si(OR)₃

-SH

(j) Halogen organosilanes of the type (R)₂X Si(CH₂)_m-R'

X = Cl, Br

R = alkyl

$m = 0, 1 - 20$

R' = methyl-, aryl (e.g., $-C_6H_5$, substituted phenyl groups)

$-C_4F_9$, $-OCF_2-CHF-CF_3$, $-C_6F_{13}$, $-O-CF_2-CHF_2$

$-NH_2$, $-N_3$, SCN , $-CH=CH_2$, $-NH-CH_2-CH_2-NH_2$,

$-N-(CH_2-CH_2-NH_2)_2$

$-OOC(CH_3)C=CH_2$

$-OCH_2-CH(O)CH_2$

$-NH-CO-N-CO-(CH_2)_5$

$-NH-COO-CH_3$, $-NH-COO-CH_2-CH_3$, $-NH-(CH_2)_3Si(OR)_3$

$-S_x-(CH_2)_3Si(OR)_3$

$-SH$

(k) Silazanes of the type $R'R_2Si-N-SiR_2R'$

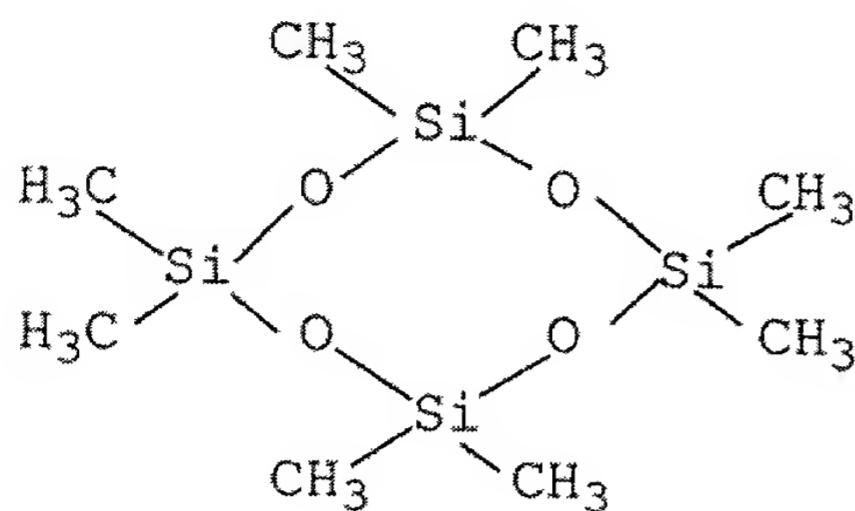


R = alkyl

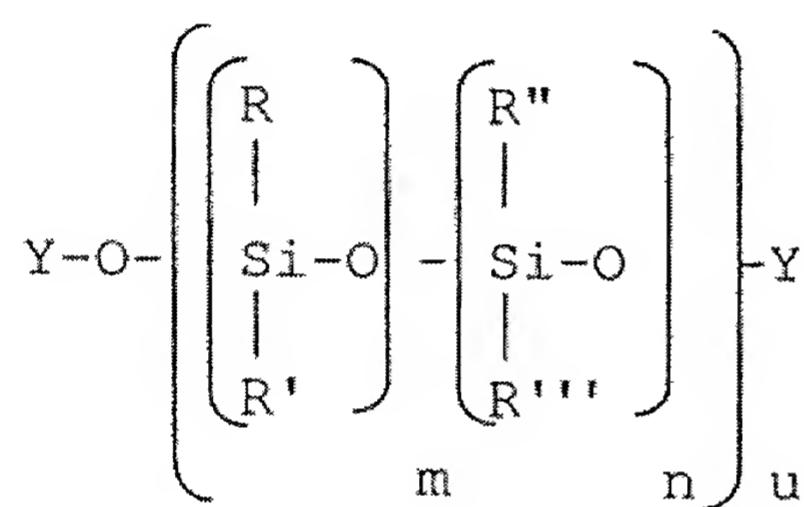
R' = alkyl, vinyl

(l) Cyclic polysiloxanes of the type D 3, D 4, D 5, e.g.

octamethylcyclotetrasiloxane = D4



m) Polysiloxanes or silicone oils of the type



$m = 0, 1, 2, 3, \dots \infty$

$n = 0, 1, 2, 3, \dots \infty$

$u = 0, 1, 2, 3, \dots \infty$

$Y = CH_3, H, C_nH_{2n+1} \quad n=1-20$

$Y = Si(CH_3)_3, Si(CH_3)_2H$

$Si(CH_3)_2OH, Si(CH_3)_2(OCH_3)$

$Si(CH_3)_2(C_nH_{2n+1}) \quad n=1-20$

$R =$ alkyl, aryl, $(CH_2)_n-NH_2, H$

$R' =$ alkyl, aryl, $(CH_2)_n-NH_2, H$

$R'' =$ alkyl, aryl, $(CH_2)_n-NH_2, H$

$R''' =$ alkyl, aryl, $(CH_2)_n-NH_2, H$

4. A method of producing the surface-modified oxides in accordance with claim 1 or 2, characterized in that pyrogenically produced oxides doped by aerosol are placed in a suitable mixing container, the oxides are sprayed under intensive mixing, optionally with water and/or acid at first and subsequently with a surface-modification reagent or a mixture of several surface-modification reagents, optionally re-mixed 15 to 30 minutes and tempered at a temperature of 100 to 400 °C for a period of 1 to 6 hours.

5. The use of the surface-modified oxides as reinforcing filler.